1. (Currently Amended) A method for generating faster discrete cosine transforms, comprising:

arranging discrete cosine transform equations into collections, wherein at least one collection includes [ of ] at least two discrete transform equations, and wherein the [ collection ] at least two discrete transform equations includes at least two discrete cosine transform constants;

scaling the discrete cosine transform equations in [ the at least one ] a collection by dividing each of the discrete cosine transform constants in the collection by one [ of the ] discrete cosine transform [ constants ] constant from the [ at least one ] collection; and

representing each of the scaled discrete cosine transform constants with sums of powers-of-2, wherein the sums of powers-of-2 are calculated to approximate [ that are approximations for ] the scaled discrete cosine transform constants.

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2. (Original) The method of claim 1 further comprising separating an image into at least one block and transforming the block into transformed data by performing matrix multiplication on the discrete cosine transform equations based upon binary arithmetic using the estimated scaled discrete cosine transform constants and performing linear shifts and additions.

3. (Original) The method of claim 1 wherein the scaling the discrete cosine transform equations in the at least one collection by dividing each of the discrete cosine transform constants in the at least one collection by one of the discrete cosine transform constants from the at least one collection saves multiplications.

4. (Original) The method of claim 1 wherein the discrete cosine transform constant chosen for scaling the discrete cosine transform equations in the at least one collection is selected according to a predetermined cost function.

5. (Original) The method of claim 4 wherein the cost function minimizes a number of add operations.

6. (Original) The method of claim 4 wherein the cost function minimizes a worst case number of add operations.

7. (Original) The method of claim 4 wherein the cost function minimizes an error per constant resulting from the approximations.

8. (Original) The method of claim 2 wherein the transforming the block into transformed data further comprises using at least one set of one dimensional discrete cosine transform equations.

9. (Original) The method of claim 8 wherein the discrete cosine transform constants are obtained by splitting the discrete cosine transform constants into even and odd terms by obtaining sums and differences of input samples.

10. (Original) The method of claim 2 wherein the block is an $N_1 x N_2$ block.

11. (Original) The method of claim 10 wherein $N_1 = N_2 = 8$.

12. (Currently Amended) A data compression system, the data compression system comprising a discrete cosine transformer for applying a discrete cosine transform to decorrelate data into discrete cosine transform equations, the discrete cosine transform equations having been formed by arranging discrete cosine transform equations into collections, wherein at least one collection includes [ of ] at least two discrete transform equations, and wherein the [ collection ] at least two discrete transform equations includes at least two discrete cosine transform constants, scaling the discrete cosine transform equations in [ the at least one ] a collection by dividing each of the discrete cosine transform constants in the collection by one [ of the ] discrete cosine transform [ constants ] constant from the [ at least one ] collection and representing each of the scaled discrete cosine transform constants with sums of powers-of-2, wherein the sums of powers-of-2 is calculated to approximate [ that are approximations for ] the scaled discrete cosine transform constants.

13. (Original) The data compression system of claim 12 further comprising a quantizer for quantizing the transformed data into quantized data to reduce the number of bits needed to represent the transform coefficients.

14. (Original) The data compression system of claim 12 wherein the discrete cosine transformer further separates an image into at least one block and transforms the block into transformed data using the discrete cosine transform equations based upon binary arithmetic using the estimated scaled discrete cosine transform constants and performing linear shifts and additions.

15. (Original) The data compression system of claim 12 wherein the transformer executes equations that save multiplication operations, the equations having been formed by scaling the discrete cosine transform equations in the at least one collection by dividing each of the discrete cosine transform constants in the at least one collection by one of the discrete cosine transform constants from the at least one collection.

16. (Original) The data compression system of claim 15 further comprising an entropy encoder for further compressing the quantized coefficients losslessly.

17. (Original) The data compression system of claim 12 wherein the discrete cosine transform constant used for scaling the discrete cosine transform equations in the at least one collection is selected according to a predetermined cost function.

C1

18. (Original) The data compression system of claim 17 wherein the cost function minimizes a number of add operations.

19. (Original) The data compression system of claim 17 wherein the cost function minimizes a worst case number of add operations.

20. (Original) The data compression system of claim 17 wherein the cost function minimizes an error per constant resulting from the approximations.

21. (Original) The data compression system of claim 12 wherein discrete cosine transformer uses at least one set of one dimensional discrete cosine transform equations.

22. (Original) The data compression system of claim 22 wherein the equations split the discrete cosine transform coefficients into even and odd terms by obtaining sums and differences of input samples.

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23. (Original) The data compression system of claim 14 wherein the block is an $N_1xN_2$ block.

24. (Original) The data compression system of claim 23 wherein $N_1 = N_2 = 8$.

25. (Currently Amended) A printer, comprising:

a memory for storing data;

a processor for processing the data to provide a compressed print stream output; and

a printhead driving circuit for controlling a printhead to generate a printout of the data;

wherein the processor applies a discrete cosine transform to decorrelate data into transform coefficients using discrete cosine equations, the discrete cosine transform equations having been formed by arranging discrete cosine transform equations into collections, wherein at least one collection includes [ of ] at least two discrete transform equations, and wherein the [ collection ] at least two discrete transform equations includes at least two discrete cosine transform constants, scaling the discrete cosine transform equations in [ the at least one ] a collection by dividing each of the discrete cosine transform constants in the collection by one [ of the ] discrete cosine transform [ constants ] constant from the [ at least one ] collection and representing each of the scaled discrete cosine transform constants with sums of powers-of-2, wherein the sums of powers-of-2 is calculated to approximate [ that are approximations for ] the scaled discrete cosine transform constants.

26. (Original) The printer of claim 25 wherein the processor further separates an image into at least one block and transforms the block into transformed data by performing matrix multiplication on the discrete cosine transform equations based upon binary arithmetic using the estimated scaled discrete cosine transform constants and performing linear shifts and additions.

27. (Original) The printer of claim 25 wherein the processor executes equations that save multiplication operations, the equations having been formed by scaling the discrete cosine transform equations in a collection by dividing each of the discrete cosine transform constants in the at least one collection by one of the discrete cosine transform constants from the at least one collection.

28. (Original) The printer of claim 25 wherein the discrete cosine transform constant used in scaling the discrete cosine transform equations in the at least one collection is selected according to a predetermined cost function.

29. (Original) The printer of claim 28 wherein the cost function minimizes a number of add operations.

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30. (Original) The printer of claim 28 wherein the cost function minimizes a worst case number of add operations.

31. (Original) The printer of claim 28 wherein the cost function minimizes an error per constant resulting from the approximations.

32. (Original) The printer of claim 25 wherein processor uses at least one set of one dimensional discrete cosine transform equations.

33. (Original) The printer of claim 32 wherein the processor splits the discrete cosine transform coefficients into even and odd terms by obtaining sums and differences of input samples.

34. (Original) The printer of claim 26 wherein the block is an $N_1xN_2$ block.

35. (Original) The printer of claim 34 wherein $N_1 = N_2 = 8$.

36. (Currently Amended) An article of manufacture comprising a program storage medium readable by a computer, the medium tangibly embodying one or more programs of instructions executable by the computer to use equations created by a method for generating faster discrete cosine transforms, the method comprising:

arranging discrete cosine transform equations into collections, wherein at least one collection includes [ of ] at least two discrete transform equations, and wherein the [ collection ] at least two discrete transform equations includes at least two discrete cosine transform constants;

scaling the discrete cosine transform equations in [ the at least one ] a collection by dividing each of the discrete cosine transform constants in the collection by one [ of the ] discrete cosine transform [ constants ] constant from the [ at least one ] collection; and

representing each of the scaled discrete cosine transform constants with sums of powers-of-2, wherein the sums of powers-of-2 are calculated to approximate [ that are approximations for ] the scaled discrete cosine transform constants.

37. (Original) The article of manufacture of claim 36 further comprising separating an image into at least one block and transforming the block into transformed data by using discrete cosine transform equations based upon binary arithmetic using the estimated scaled discrete cosine transform constants and performing linear shifts and additions.

38. (Original) The article of manufacture of claim 36 wherein the scaling the discrete cosine transform equations in the at least one collection by dividing each of the discrete cosine transform constants in the at least one collection by one of the discrete cosine transform constants from the at least one collection saves multiplications.

39. (Original) The article of manufacture of claim 36 wherein the discrete cosine transform constant chosen for scaling the discrete cosine transform equations in the at least one collection is selected according to a predetermined cost function.

40. (Original) The article of manufacture of claim 39 wherein the cost function minimizes a number of add operations.

C1

41. (Original) The article of manufacture of claim 39 wherein the cost function minimizes a worst case number of add operations.

42. (Original) The article of manufacture of claim 39 wherein the cost function minimizes an error per constant resulting from the approximations.

43. (Original) The article of manufacture of claim 36 wherein the transforming the block into transformed data further comprises using at least one set of one dimensional discrete cosine transform equations.

44. (Original) The article of manufacture of claim 43 wherein the discrete cosine transform constants are obtained by splitting the discrete cosine transform constants into even and odd terms by obtaining sums and differences of input samples.

45. (Original) The article of manufacture of claim 37 wherein the block is an $N_1xN_2$ block.

46. (Original) The article of manufacture of claim 45 wherein $N_1 = N_2 = 8$.

47. (Currently Amended) A data analysis system, comprising;

a memory for storing discrete cosine transform equations having been formed by arranging discrete cosine transform equations into collections, wherein at least one collection includes [ of ] at least two discrete transform equations, and wherein the [ collection ] at least two discrete transform equations includes at least two discrete cosine transform constants, scaling the discrete cosine transform equations in [ the at least one ] a collection by dividing each of the discrete cosine transform constants in the collection by one [ of the ] discrete cosine transform [ constants ] constant from the [ at least one ] collection and representing each of the scaled discrete cosine transform constants with sums of powers-of-2, wherein the sums of powers-of-2 is calculated to approximate [ that are approximations for ] the scaled discrete cosine transform constants; and

a transformer for applying the transform equations to perform a discrete cosine transform to decorrelate data into discrete cosine transform coefficients.

48. (Original) The data analysis system of claim 47 wherein the transformer further separates an image into at least one block and transforms the block into transformed data by using the discrete cosine transform equations based upon binary arithmetic using the estimated scaled discrete cosine transform constants and performing linear shifts and additions.

C1

49. (Original) The data analysis system of claim 47 wherein the discrete cosine transform constant used for scaling the discrete cosine transform equations in the at least one collection is selected according to a predetermined cost function.